UNITED STATES PATENT OFFICE.

JOHN H. CRANE AND CHARLES W. CRANE, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN PROCESSES FOR ORNAMENTING SURFACES OF GLASS, &c.

Specification forming part of Letters Patent No. **161,760**, dated April 6, 1875; application filed October 21, 1874.

To all whom it may concern:

Be it known that we, JOHN H. CRANE and CHARLES W. CRANE, both of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Ornamenting the Surfaces of Glass, Tin, &c.; and we do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same.

Our invention relates to forming figures or ornaments on the surface of glass, tin, or other material, to which a coating of paint or varnish may be made to adhere; and consists in a method of forming ornaments or figures by removing portions of the paint or other adhering substances, or of the material of which the article to be ornamented is composed, which will hereinafter be fully explained.

Suppose we are to ornament one surface of a sheet of tin with figures in black asphaltum; we first paint the surface, or so much thereof as may be necessary, with asphaltum varnish, and, when this is set or hard, coat it over with a protecting layer of soap, though other substances may be employed which will operate in the manner described. We then place a stencil-plate, properly shaped or cut, upon the layer of soap, and, holding it firmly in place, with a brush wet with spirits of turpentine, rub up and soften the asphaltum varnish beneath the soap in the open-work part of the stencil-pattern, and then, removing the stencil-plate, wash away the soap and softened asphaltum in water.

By the use of soap we protect the asphaltum from being softened by the turpentine except in those places where the soap is brushed away, and, by the stencil-plate, protect the soap from being brushed away, except in those parts which are not covered by the plate.

The portion of the asphaltum which was covered by the stencil-plate will be found unacted on, or very slightly acted on, while the portion that was uncovered will have been removed, and the ground of tin will now be exposed to view.

The varnish left on the tin will now show a figure in shape like the stencil-plate employed, and this process may be employed, in a manner to be described, in forming like-shaped figures in the substance of any article, and of any adhering substances upon which it may be formed.

Suppose we are to form figures in burnished silver on glass, with a ground of ground glass; we first silver one surface of the glass, or so much thereof as may be necessary, either with silver-leaf, using water size, or with nitrate of silver, in the usual manner, and then cover the silver with a coat of red shellac paint. Then, with a suitable stencil-plate, we form figures in asphaltum upon the surface of the shellac paint, in the manner before described, and then, with a brush, wet the alcohol, soften and rub away the portion of the shellac exposed in the open part of the asphaltum, showing the silver beneath. Then, with a brush wet with nitric acid, cut away the silver, exposing the clear glass. Then expose the surface operated on, which now shows an asphaltum figure on a ground of clear glass, to the action of a sand-blast or current of falling sand, which will grind the exposed clear glass, while the asphaltum-covered parts, being protected by such covering, will be unacted on. Then, with a cloth wet with spirits of turpentine, soften and rub away the asphaltum composing the figure, exposing the red shellac beneath, which we now, with a cloth wet with alcohol, soften and remove, showing burnished silver figures with a ground of ground glass.

If it be the reverse surface of the glass which is to be exposed to view, the shellac may remain on the surface of the figures, which will show through the glass in burnished silver.

Figures may be thus formed each of a different color by the same process, taking care in laying on the colors that adjoining colors shall be such as have different solvents, and also that the paint employed in each operation shall resist the solvents used in each layer beneath, and also to leave some figure of each layer of color exposed by removing from such figure only the layers above.

We do not claim the solvents named, as they are well known; neither do we limit

our claim to the particular varnish named. Any other solvent, or varnish, or paint may be employed which will operate in the manner described.

We claim—

1. The described process of forming designs upon surfaces, consisting essentially of the employment of asphaltum varnish, soap, stencil-plates, and spirits of turpentine, as and for the purpose substantially set forth.

2. The described process of ornamenting silvered glass, consisting essentially of the subject-matter above claimed, with the additional employment of red shellac paint, alcohol, nitric acid, and the sand-blast, as and for the purpose substantially set forth.

In testimony that we claim the foregoing as our own invention we affix our signatures in presence of two witnesses.

JOHN H. CRANE.
CHAS. W. CRANE.

Witnesses:
F. P. HALE,
F. C. HALE.